

CLAIMS

What is claimed is:

1. A water heater connectable to a power source, the water heater comprising:
a vessel having an exterior surface;
a thermally conductive mounting device coupled to the exterior surface, the mounting device comprising
a base having a first surface configured to substantially follow the shape of the exterior surface of the vessel, and a second surface, and
a heat-dissipating element coupled to the base;
a controller configured to selectively generate a signal based on a temperature of water in the vessel;
a switch connectable to the power source, connected to the controller, and coupled to the second surface of the base, the switch configured to conduct power from the power source in response to the signal; and
a heating element connected to the switch to receive the power.
2. The water heater of claim 1, wherein the exterior surface of the vessel is arcuate, and wherein the first surface of the base is arcuate to follow the shape of the vessel.
3. The water heater of claim 1, wherein the vessel is substantially cylindrical.
4. The water heater of claim 1, wherein the heat-dissipating element is coupled to the second surface.
5. The water heater of claim 1, wherein the heat-dissipating element is integrally formed with the base.
6. The water heater of claim 5, wherein the base and the heat-dissipating element form a heat-dissipating surface.
7. The water heater of claim 6, wherein the heat-dissipating surface includes the second surface.

8. The water heater of claim 1, wherein the thermally conductive mounting device further includes a mounting platform coupled to the base, and wherein the second surface includes the mounting platform.
9. The water heater of claim 1, wherein the switch includes an electronic switch.
10. The water heater of claim 9, wherein the electronic switch includes a triac.
11. The water heater of claim 1, wherein the mounting device comprises a thermally conductive, electrically dielectric material.
12. The water heater of claim 11, wherein the mounting device further comprises terminal connections molded into a terminal block, the switch being electrically coupled to the terminal connections, and wherein the thermally conductive, electrically dielectric material electrically isolates the terminal connections from the vessel.
13. The water heater of claim 1, wherein the mounting device is coupled to the vessel using a thermally conductive epoxy.
14. The water heater of claim 1, wherein the second surface of the mounting device includes a flat portion to accept the direct mounting of the switch.
15. The water heater of claim 1, wherein the mounting device includes a plurality of heat-dissipating elements.
16. The water heater of claim 15, wherein the plurality of heat-dissipating elements are a plurality of heat-dissipating fins.
17. The water heater of claim 1, wherein the controller includes the switch.

18. The water heater of claim 1, wherein the mounting device further comprises a second mounting platform, and wherein the controller is configured to selectively generate a second signal based on the temperature of water, and wherein the water heater further comprises a second switch connectable to the power source, connected to the controller, and coupled to the second mounting platform, the second switch configured to conduct power from the power source in response to the second signal, and wherein the water heater further comprises a second heating element connected to the second switch to receive the power.

19. The water heater of claim 1, wherein the controller is configured to selectively generate a second signal based on the temperature of water, and wherein the water heater further comprises a second switch connectable to the power source, connected to the controller, and coupled to the second surface, the second switch configured to conduct power from the power source in response to the second signal, and wherein the water heater further comprises a second heating element connected to the second switch to receive the power.

20. The water heater of claim 1, wherein the water heater further comprises a second switch connectable to the power source, connected to the controller, and coupled to the second surface, and wherein the base includes a channel between the first and second switches.

21. A heat dissipation device adapted to receive a heat-generating component and to couple to an exterior surface of a heat sink, the heat dissipation device comprising:
 - a base having
 - a first surface configured to substantially follow the shape of the exterior surface of the heat sink, and
 - a second surface configured to receive the heat-generating component; and
 - at least one heat-dissipating element coupled to the base;
 - wherein the heat-dissipating device comprises a thermally conductive, electrically dielectric material to conduct heat from the heat-generating component to the heat sink.
22. The heat dissipation device of claim 21, wherein the exterior surface of the heat sink is arcuate, and wherein the first surface of the base is arcuate to follow the shape of the vessel providing increased contact between the base and the vessel.
23. The heat dissipation device of claim 21, wherein the heat-generating component is a switch.
24. The heat dissipation device of claim 23, wherein the switch includes an electronic switch, such as a triac.
25. The heat dissipation device of claim 21, wherein the heat sink comprises a vessel in a water heater.
26. The heat dissipation device of claim 21, wherein the heat dissipation device is coupled to the surface of the heat sink by a thermally conductive epoxy.
27. The heat dissipation device of claim 21, wherein the heat-dissipating element is coupled to the second surface.
28. The heat dissipation device of claim 21, wherein the heat-dissipating element is integrally formed with the base.

29. The heat dissipation device of claim 21, wherein the heat dissipation device includes a plurality of heat-dissipating elements.
30. The heat dissipation device of claim 21, wherein the second surface includes a flat portion to accept direct mounting of the heat-generating component.
31. The heat dissipation device of claim 21, wherein the heat dissipation device includes a mounting platform coupled to the base, and wherein the second surface includes the mounting platform.
32. The heat dissipation device of claim 21, wherein the second surface is adapted to receive at least two heat-generating components, and wherein the second surface includes a channel between the first and second heat-generating components.
33. The heat dissipation device of claim 21, wherein the heat dissipation device includes a second mounting platform to receive a second heat-generating component, and wherein the base includes a channel between the first and second heat-generating components.
34. The heat dissipation device of claim 21, wherein the heat dissipation device further comprises terminal connections molded into a terminal block, the heat-generating component being electrically coupled to the terminal connections, and wherein the thermally conductive, electrically dielectric material electrically isolates the terminal connections from the heat sink.

35. A water heater connectable to a power source, the water heater comprising:
a water tank having an arcuate exterior surface;
a thermally conductive mounting device coupled to the exterior surface of the water tank, the mounting device comprising
a base having an arcuate first surface to substantially follow the shape of the exterior surface of the water tank, and a second surface, and
a heat-dissipating element coupled to the base;
a controller configured to selectively generate a signal based on a temperature of water in the water tank;
a switch connectable to the power source, connected to the controller, and coupled to the second surface of the base, the switch configured to conduct power from the power source in response to the signal; and
a heating element connected to the switch to receive the power.
36. The water heater of claim 35, wherein the heat-dissipating element is coupled to the second surface.
37. The water heater of claim 35, wherein the heat-dissipating element is integrally formed with the base.
38. The water heater of claim 35, wherein the mounting device includes a plurality of heat-dissipating elements.
39. The water heater of claim 35, wherein the thermally conductive mounting device further includes a mounting platform coupled to the base, and wherein the second surface includes the mounting platform
40. The water heater of claim 35, wherein the second surface of the mounting device includes a flat portion to accept the direct mounting of the switch.
41. The water heater of claim 35, wherein the switch includes an electronic switch.
42. The water heater of claim 41, wherein the electronic switch includes a triac.

43. The water heater of claim 35, wherein the mounting device comprises a thermally conductive, electrically dielectric material.
44. The water heater of claim 35, wherein the mounting device is coupled to the water tank using a thermally conductive epoxy.
45. The water heater of claim 35, wherein the controller includes the switch.
46. The water heater of claim 35, wherein the controller is configured to selectively generate a second signal based on the temperature of the water, and wherein the water heater further comprises a second switch connectable to the power source, connected to the controller, and coupled to the second surface, the second switch configured to conduct power from the power source in response to the second signal, and wherein the water heater further comprises a second heating element connected to the second switch to receive the power.
47. The water heater of claim 46, wherein the second surface includes a channel between the first and second switches.